Junior Academy Program 2020
Virtual event April 18, 2020

Saturday, April 18, 2020  9:30am - 11:30am

High School - Biological Topics 1

9:30 - Cardiac Mesenchymal Cells Cultured at Physiologic Oxygen Tension Have Superior Therapeutic Efficacy in Mice with HF
Topic: High School Biological Topics I - morning presentations
Robi Bolli
duPont Manual High School

9:45 - Examining Mechanisms of Resistance In Palbociclib-Resistant Estrogen Receptor-Positive Breast Cancer Cells
Topic: High School Biological Topics I - morning presentations
Aditi Kona
North Oldham High School

10:00 - Nrf2 Pathway is Critical to Right Heart Failure by Sulforaphane in a Pulmonary Arterial Hypertension Mouse Model
Topic: High School Biological Topics I - morning presentations
<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Presenters</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:30</td>
<td>The Induction of Cell-Cycle Arrest Inhibits Muscle-Invasive Bladder Cancer by a Small Molecule</td>
<td>Emma Huang duPont Manual High School</td>
</tr>
<tr>
<td>9:30 - 11:30am</td>
<td><strong>High School - Biological Topics II</strong> - morning presentations</td>
<td>Aakash Vadhanam duPont Manual High School</td>
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<td>9:45</td>
<td>Effect of Persulfates on the Prevalence of Bacteria on Removable Retainers</td>
<td>Khushi Pola duPont Manual High School</td>
</tr>
<tr>
<td>10:00</td>
<td>Grape Components for Periodontal Treatment</td>
<td>Anne Liang duPont Manual High School</td>
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<tr>
<td>10:15</td>
<td>The Effect of Age on Emotional Connection to Music</td>
<td>Wavid Bowman DuPont Manual High School</td>
</tr>
<tr>
<td>10:30</td>
<td>Effect of Age-Related Inflammation on Different Sub-types of Ischemic Stroke</td>
<td>Shaun Liu duPont Manual High School</td>
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<td>Creating an AI Model to Predict an Organism's Future Evolution</td>
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<tr>
<td>9:45</td>
<td>Powered by Termites - a novel approach to methane production for renewable biofuel</td>
<td>Ranga Chennakesavula</td>
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<tr>
<td>10:00</td>
<td>The Effect of Electromagnetic Radiation on Vigna Radiata</td>
<td>Kiera Fehr</td>
</tr>
<tr>
<td>10:15</td>
<td>The Effect of Titanium Dioxide Photocatalysis on Birth Control Pills in Drug-Polluted Waters</td>
<td>Jash Pola</td>
</tr>
<tr>
<td>10:30</td>
<td>The Role of Cell-Wall Degrading Enzymes in the Pathogenicity of the Fungus Colletotrichum graminicola to Maize</td>
<td>Spandana Pavuluri</td>
</tr>
<tr>
<td>9:45</td>
<td>Analysis of the JPL Small Body Database in Order to Find the Asteroid best Suited for future Minding Expeditions.</td>
<td>Jamari Taylor</td>
</tr>
</tbody>
</table>

**High School - Chemistry and Physics**

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<tr>
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<th>Affiliation</th>
</tr>
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<tr>
<td>9:30</td>
<td>AN ANALYSIS OF POLYSIALIC ACID AND ITS CONTRIBUTIONS TO EPITHELIAL NON-SMALL CELL LUNG CANCER AND THE IMMUNE RESPONSE</td>
<td>Sushruth Muthuluru</td>
<td>duPont Manuual</td>
</tr>
<tr>
<td>9:45</td>
<td>Analysis of the JPL Small Body Database in Order to Find the Asteroid best Suited for future Minding Expeditions.</td>
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<td>Topic</td>
<td>Speaker</td>
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<tr>
<td>10:15</td>
<td>Electrospun Nanofibers for Air Filtration</td>
<td>High School Chemistry and Physics - morning presentations</td>
<td>Shreeya Julakanti</td>
</tr>
<tr>
<td>10:30</td>
<td>Growth and Analysis of Nano Clusters: Self-Organized Pattern Formation</td>
<td>High School Chemistry and Physics - morning presentations</td>
<td>James Gonzalez</td>
</tr>
<tr>
<td>10:45</td>
<td>The Effect of Water Temperature on Water Electrolysis Voltage Output, Eliminate the Electricity Crisis Now</td>
<td>High School Chemistry and Physics - morning presentations</td>
<td>Anirudh Devara</td>
</tr>
<tr>
<td>11:00</td>
<td>The Optimal Annealing Temperatures to Create Carbon Nanoshells from Metal Precursor Treatments for the Use of Electrodes</td>
<td>High School Chemistry and Physics - morning presentations</td>
<td>Viyathma Hapuarachchi</td>
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**High School - Computer Science and Engineering 1**

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<tr>
<td>9:45</td>
<td>A Real-Time Temperature Monitoring System For Cold Chain Logistics using IoT and Arduino</td>
<td>High School - Computer Science &amp; Engineering 1 - morning presentations</td>
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</tbody>
</table>
Sai Jeyaprakash  
*duPont Manual High School*

**10:00 - Integrating Precision Agriculture through Automated Nutrient Analysis and Artificial Intelligence Crop Modeling**

Topic: High School - Computer Science & Engineering 1 - morning presentations

Smrithi  
Balasubramanian  
*duPont Manual High School*

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Smrithi Balasubramanian  
*duPont Manual High School*

Saturday, April 18, 2020 9:30am - 11:30am

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**High School - Computer Science & Engineering 2**

**9:30 - Abstract on The Effect of Bridge Column Column Type on The Longevity of Bridges**

Topic: High School - Computer Science & Engineering 2- morning presentations

Hrishikesh Bhatt  
*duPont Manual High School*

**9:45 - An Alarm System to Prevent Hot Car Deaths and Carbon Monoxide Poisoning Using Motion Detection**

Topic: High School - Computer Science & Engineering 2- morning presentations

Amy Suo  
*duPont Manual High School*

**10:00 - Assessing the Structural Strength of Concrete Members Using a Low-Cost, Non-Invasive Monitoring System**

Topic: High School - Computer Science & Engineering 2- morning presentations

Nimish Mathur  
*duPont Manual High School*

**10:15 - Au and Ag Nanoparticles from Invasive/Ornamental Plant Extract for Cancer Diagnosis**

Topic: High School - Computer Science & Engineering 2- morning presentations

Jaley Adkins  
*Other Group Member*  
*Belfry High School*

Other Group Member  
(Madison Slone  
*Belfry High School*)
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<tr>
<td>9:30am</td>
<td>Anti-diabetic effect of bitter tasty plant products on type 2 diabetic children: Importance of neglected bitter taste</td>
<td>Middle School 1 - morning presentations</td>
<td>Vedha Balamurugan</td>
<td>North Oldham Middle school</td>
</tr>
<tr>
<td>9:45am</td>
<td>Exploring Food Waste Production of Methane</td>
<td>Middle School 1 - morning presentations</td>
<td>Thomas Galla</td>
<td>St Francis of Assisi</td>
</tr>
<tr>
<td>10:00am</td>
<td>Hyssop: a Kentucky Native Cancer Treatment?</td>
<td>Middle School 1 - morning presentations</td>
<td>Emerson Wyatt</td>
<td>St. Francis of Assisi</td>
</tr>
<tr>
<td>10:15am</td>
<td>Nattokinase and Serrapeptase: Discovering an OTC Cure for Alzheimer's Disease</td>
<td>Middle School 1 - morning presentations</td>
<td>Claire Midland</td>
<td>St Francis Of Assisi</td>
</tr>
<tr>
<td>10:30am</td>
<td>Screen Light Poison: Does Digital Screen Blue Light Impact Health?</td>
<td>Middle School 1 - morning presentations</td>
<td>Chloe Nunn</td>
<td>St. Francis of Assisi Catholic School</td>
</tr>
<tr>
<td>10:45am</td>
<td>The Development, Effects, and Treatment of Eutrophication</td>
<td>Middle School 1 - morning presentations</td>
<td>Chakrapani</td>
<td>Winburn Middle School</td>
</tr>
<tr>
<td>11:00am</td>
<td>The Psychology of Surveillance Part II: How Location Alters the Effectiveness of Watching Eyes Signs</td>
<td>Middle School 1 - morning presentations</td>
<td>Colin Clevenger</td>
<td>Southern Middle</td>
</tr>
</tbody>
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### Middle School - Session 2

**9:30 - Bully Buster: An App to Protect Kids from Online Bullying**  
Topic: Middle School 2 - morning presentations  
Jason Millard  
*St. Francis of Assisi*

**9:45 - Developing a Simple Security Coating to Effectively Identify Tampering**  
Topic: Middle School 2 - morning presentations  
Vallabh Ramesh  
*Meyzeek Middle School*  
*Other Group Member*  
*(if any)*  
Emma Hatfield  
*Meyzeek Middle School*

**10:00 - Exploring Neurotoxin Shed In Child Products**  
Topic: Middle School 2 - morning presentations  
Leah Niemann  
*St Francis of Assisi*

**10:15 - Foodle: An IoT and AI-based Integrated System to Reduce Food Waste, Food Insecurity and Save the Environment**  
Topic: Middle School 2 - morning presentations  
Shraman Kar  
*Meyzeek Middle School*

**10:30 - Hemp Extract: Miracle Cure or Microbiome Disruptor?**  
Topic: Middle School 2 - morning presentations  
Mary Shea Ballantine  
*St. Francis of Assisi*

**10:45 - How do Parameters Affect the Dynamic Stability of a Mathematical Population Model?**  
Topic: Middle School 2 - morning presentations
Justin Huang
Meyzeek Middle School

11:00 - The Efficiency Comparison of Programs Using the Pick-A-Ball Robot
Topic: Middle School 2 - morning presentations

Shreyas Ghare
Meyzeek Middle School

Shirlin Kingston
duPont Manual High School

1:15 - Testing the Accuracy of Optically Stimulated Luminescence Dosimeters when tested under the Linac Machine
Topic: High School finalists - afternoon presentations

Romith Paily
duPont Manual High School

1:30 - What is the Effect of Ladder Fuel Treatments on the Burn Area of Forest Fires in a Semi-Arid High Elevation Climate?
Topic: High School finalists - afternoon presentations

Brian Schwartz
duPont Manual High School

1:45 - Discovery and Analysis of a Novel Microbacteriophage
Topic: High School finalists - afternoon presentations

Diksha Satish
The Gatton Academy

2:00 - Machine Learning Algorithm Using Logistic Regression, ANN and SVM for Early Stage Detection of Parkinson's Disease
Topic: High School finalists - afternoon presentations
Shreyas Kar
_duPont Manual High School_

2:15 - Automatic Portable Phoropter and Auto Focus Glasses using an Integrated Variable Focal Liquid Lens

Topic: High School finalists - afternoon presentations

Varun Chandrashekhar
_School_

Find photos from the 2019 Junior Academy meeting HERE

2020